

- Kelley, I. D., *Journal Missouri State Medical Association*.  
 Poynton, F. S. & Paine, A., *Lancet*, August 17, 1912.  
 Rosenow, E. C., *J. A. M. A.*, November 13, 1915.  
 Richards, G. L., *Boston Medical and Surgical Journal*,  
 Jan. 7, 1915.  
 Roethlisberger, Muench Med. Wchnsch., Feb. 20, 1912.  
 Shambaugh, G. E., *Illinois Medical Journal*, Nov., 1914.  
 Shambaugh, G. E., *Proceedings A. L. R. & O. Society*,  
 1914.  
 Thiesen, C. F., *Albany Medical Annuals*, August, 1913.  
 Tedesko, Klin. Therap. Wchnsch., Jan. 26, 1914.  
 Verdet, L., *Southern Medical Journal*, Sept., 1914.  
 Wetherall, H. G., *J. A. M. A.*, August 21, 1915.  
 Wilson, N. L., *Journal A. M. A.*, Nov. 7, 1914.  
 Wood, G. B., *American Journal of Medical Science*,  
 March, 1914.  
 The Laryngoscope, March, 1915.

### Discussion.

Sanford Blum, M. D.: The role played by infective foci in the etiology of endocarditis seems to be regarded as a new discovery. It is not very new. It has merely received wider recognition since it has been presented by men in more prominent positions; but the association has long been known and recognized. In 1902 I presented for a Master's degree, at the University of California, a thesis entitled "The Etiology of Endocarditis with Especial Reference to Bacterial Agencies." This paper was published in *American Medicine*, January 17, 1903, Vol. 5, No. 3, page 94 seq. In it I stated that "all bacteria pathogenic to the individual may cause endocarditis under the proper conditions. There must be a locus minoris resistential and the bacteria must be in the blood. They may enter the circulation from various sources—from an abscess of the foot (Winge's case), from the septic womb, from the intestines." But no single case of endocarditis has, so far as I am aware, been positively proved to have emanated from infected tonsils. Many cases of endocarditis have been discovered after tonsillitis, but post hoc does not prove propter hoc in these cases.

It has been stated to-day that when endocarditis exists, removal of infected tonsils (assumed to be the source of infection), should halt the process and prevent further destruction from the endocardium. Even if it should be assumed that the tonsils were the original focus from which the endocardium became infected—it seems illogical to conclude that, after the endocardium has become infected and a metastasis established, removal of the distant focus would check the process. Nor has tonsillectomy had this beneficial result in endocarditis cases which I have seen.

In a paper, "The Proper Position of Tonsillectomy in Pediatrics," read before the California Pediatric Society April 22, 1915, I cited cases of endocarditis beginning subsequent to tonsillectomy. Koplik (*American Journal of Medical Sciences*, July, 1912), reports similar observations. J. Herbert Young (*Boston Medical and Surgical Journal*, September, 1915) has published reports of 21 cases of tonsillectomy which he had under observation for two years following operation. Twelve of these cases had endocarditis before tonsillectomy, while 17 had endocarditis after tonsillectomy. In one case acute endocarditis was present, five days after operation in a child, whose heart had appeared normal before operation. In a second case endocarditis developed two weeks after tonsillectomy. The above quoted observations appear to imply that tonsillectomy not only does not prevent or check endocarditis, but may even be a factor in its causation.

Young's observations throw light on the relation of tonsillectomy to chorea. Of his 21 cases, 12 had chorea prior to tonsillectomy; 17 had chorea subsequent to tonsillectomy. Every case in which chorea was present before tonsillectomy, had from one to four attacks in the two-year observation period, subsequent to tonsillectomy, and five additional cases occurred after the operation. In the paper referred to above, "Proper Position of Tonsillectomy," I cited similar observations. These

records indicate that the theory that tonsillectomy is a cure or preventive of chorea is false.

It is my privilege to acquaint Dr. Gundrum with an authentic case of endocarditis emanating from intestinal infection. In 1898, while serving in Escherich's clinic in Graz, I saw an infant, which had pyocyanus enteritis. There developed pyocyanus septicemia and pyocyanus endocarditis. Cultures of pyocyanus bacilli were obtained from the feces and blood of the infant, and after its death, the same bacilli were identified in the verrucosities on the endocardium. Cultures obtained from the blood, were injected into the ear vein of a rabbit, of which I had lacerated the endocardium with a probe, introduced through the carotid, and pyocyanus endocarditis developed in this rabbit. This case was published in the *Centralblatt für Bakteriologie, Parasitenkunde, und Infektionskrankheiten*, 1898, No. 25.

The tendency to condemn the tonsils, generally, as foci of infection should be criticised—as the theoretical benefits credited to tonsillectomy are not borne out by the facts. Simpson (*Jour. A. M. A.*, April, 1915) observed, in Girard College, that scarlet fever and diphtheria occurred in the same proportions in tonsillectomized and untonsillectomized children. He reports also that a boy whose tonsils had been enucleated became a diphtheria carrier. There is at present (as I was to-day informed by Dr. O'Neill) in the San Francisco Isolation Hospital, a diphtheria carrier, who became such a year after tonsillectomy. It may be asserted that failure of tonsillectomy to fulfill its promises is due to faulty operation, but it is with tonsillectomy as it is performed that we have to deal.

### FOCAL INFECTION INTESTINAL INVOLVEMENT.\*

By F. F. GUNDRUM, M. D., Sacramento.

The development of a general invasion such as septicæmia or pyæmia from an originally localized bacterial infection has been a matter of medical observation and knowledge for many, many years. It has been but recently, however, that the relation of a once acute and now quiescent local infection to disease conditions in widely separated portions of the body has been recognized. Lubarsch has shown that a focal infection may remain dormant for a long time until some often extraneous event may bring about a new activity. The pioneer work in this field has been done for the most part by Billings, Rosenow, Davis, Jackson and others in this country. Their researches have shown that a local infection may become sufficiently chronic that it causes but comparatively slight disturbance in its own neighborhood, but may still give off active bacteria or toxins to the blood stream and produce lesions in remote structures. Further that organisms of the Strep-pneumo group may under some circumstances of oxygen supply undergo transmutation in type and pathogenicity.<sup>1</sup> Many different organisms have been isolated from lymph glands which lie upon the lymph channels

\* Read at the Forty-fifth Annual Meeting of the Medical Society of the State of California, Fresno, April, 1916.

draining chronically inflamed joints, Streptococcus, B. mucosus, B. Welchii, Diphtheroids, etc.<sup>2</sup> The greatest majority of these sites of focal infection whose pernicious activity has been proven lie in and about the head, i. e. teeth, tonsils, accessory sinuses, etc. A less number have been found in the respiratory and genito-urinary systems.

There has been up to this time relatively very little written concerning the role of the gastro-intestinal tract as a location for these indolent cryptic infections. It is most likely that a healthy gastro-intestinal mucosa offers very little opportunity for the development of this sort of difficulty. Under some conditions, however, foci may be established which could result in absorption. Billings,<sup>3</sup> in enumerating various focal infections likely to prove dangerous to joints, heart, kidneys, etc., mentions chronic ulcers of the stomach or bowels; chronic appendicitis ("damage chiefly to cardiovascular apparatus"), and cholecystitis and cholangitis ("damage to cardio-vascular apparatus and kidneys"). A chronic ulcer in and about the stomach probably very rarely offers a hospitable shelter for bacterial growth on account of the hydro-chloric acid. In a study of anæmias Schmidt<sup>4</sup> called attention to the frequent association of symptoms of intestinal inflammation and indigestion with achylia gastric, and suggested that it was possibly due to bacteria let through into the bowel living, not having been killed by hydro-chloric acid as usually occurs. The achylia might be a factor in the establishment of a chronic infective focus. Further down in the ileum and colon small ulcerations of any sort and perhaps more particularly undermined ulcers have occasionally been suspected as sites of infection. Goldthwaite has pointed out in certain individuals with marked visceroptosis the dependent loops may become much more permeable and intestinal organisms, usually harmless, such as B. coli, Streptococcus intestinalis, etc., may develop pathogenicity in such an environment. All of these conditions mentioned while theoretically possible are, it must be admitted, in all probability quite rare, and indeed problematic. No one so far as I know has shown the origin of a definite arthritis to be such a lesion. There are two adnexa of the gastro-intestinal tract which are very common sufferers from acute and later residual chronic infection. These are the gall bladder and the appendix. It seems likely that the joint, kidney and heart diseases referable to infections of these structures are relatively small in proportion to those in which head infections are to be blamed. The work of Billings, Rosenow and others has been published so recently, however, that very little clinical observation has as yet been recorded. A somewhat careful review of current literature has failed to bring to light reports showing gall bladder or appendix responsible for any of the series of troubles we have now under consideration.

#### References:

- 1 Rosenow:—Jr. Infect. Diseases, Jan. 1914.
- 2 Rosenow:—Jr. A.M.A. Sept. 12, 1914.
- 3 Billings:—Arch. Int. Med. 1912, p. 484.
- 4 Schmidt:—Harvey Lecture, 1913.

## HIGH CALORY FEEDING IN CASES OF TYPHOID FEVER IN CHILDREN.\*

By H. H. YERINGTON, M. D., San Francisco.

The question of diet in typhoid fever is without a doubt the most important phase in its treatment, and although the text books during the past hundred years and long before that have devoted pages to drugs, hydrotherapy, bleeding, ventilation, etc., only a few lines deal with dietetics.

In taking up the subject of caloric feeding I thought it might be of interest to quote from a few text books on medicine written by prominent physicians during the past century.

William Cullen: Practice of Medicine, 1816: under the treatment of fevers, considered any patient with continued fever, with muttering delirium, wasting and failing heart, in the "typhoid state" and wrote as follows: "From the commencement to the close of the complaint the drinks should be diluting, mucilaginous and mild. In the latter stages, where fever and inflammation have disappeared, and debility is considerable, a small quantity of wine may be advantageously allowed. So may broths and animal jellies, but until considerable progress shall have been made in convalescence solid animal food is totally inadmissible."

At this time no differentiation was made between typhus and typhoid, the latter being only a state in continued fevers.

John Eberle, 1830: Advocated bleeding followed by a cold bath and wine. He devotes twenty pages to the treatment of typhus, one-fourth of a page being given to the diet, of which he says: "With regard to the dietetic management of the disease, it is scarcely necessary to state that the simplest kinds of liquid nourishment are alone admissible. Of these, the patient should be allowed as much as he can be induced to take, more especially during the sinking stage of the complaint." He quotes Dr. Stoker as saying, "that in the late epidemic in Ireland, many patients who were brought into the Dublin Hospital began to recover almost immediately on being allowed the free enjoyment of mild nutritious food."

John Mason Good: Study of Medicine: 1829, speaks of sitting his patients on a stool and pouring 2 gallons of cold water over their unshaved heads, which proved successful in some cases, the fever being cut short in a day or two from its commencement. This method, he says is too violent after the first three or four days of the attack, and thereafter the body is sponged. Speaking of diet he allows his patients animal broths and jellies in alteration with farinacea. This concluded his remarks on diet.

Barlow: Practise of Medicine: 1856, says under continued fevers: "This term typhoid fever is to be regarded as synonymous with gastro-enteritis. If it be understood that the intestinal inflammation in this last case is of a specific

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